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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,454	04/10/2001	Farshid Attarian	41PR-7785	4733

6152 7590 08/11/2003

PATENT OPERATION
GENERAL ELECTRIC COMPANY
41 WOODFORD AVENUE
PLAINVILLE, CT 06062

EXAMINER

DONOVAN, LINCOLN D

ART UNIT	PAPER NUMBER
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2832

DATE MAILED: 08/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/681,454

Applicant(s)

ATTARIAN ET AL.

Examiner

Donovan Lincoln

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al. [JP56-67915] in view of Burns [US 3,621,334].

Regarding claims 9 and 11, Takeya et al. discloses a current sensor comprising:

- a c-shaped magnetic core [figure 3];
- at least one first layer of material [5] having a relatively high magnetic permeability;
- at least one second layer of material [6] having a relatively low magnetic permeability;
- an opening [figures 3-4] therethrough for accepting a current conductor; and
- a gap [10] formed within the core [figure 8].

Takeya et al. disclose the instant claimed invention except for a magnetic flux sensor being mounted within the gap.

Burns discloses a c-shaped core [30] used with a current sensor having a hall-type magnetic field sensor [32] mounted in the gap.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a magnetic field sensor in the gap of Takeya et al., as suggested by Burns, for the purpose of detecting current imbalance.

Regarding claim 12, Takeya et al. disclose the instant claimed invention except for the core profile being a figure 8 having spaced opposed gap faces in the central leg defining an air gap therebetween with the magnetic flux sensor being disposed therein.

Burns further discloses a core design having a figure 8 profile [figure 4] with spaced opposed gap faces in the central leg defining an air gap therebetween with the magnetic flux sensor [77] being disposed therein.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use the figure 8 profile for the core of Takeya et al., as suggested by Burns, for the purpose of canceling off stray magnetic fields and/or controlling sensitivity.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al., as modified, as applied to claim 9 above, and further in view of Berkcan et al. [US 6,018,239].

Takeya et al. disclose the instant claimed invention except for a secondary winding being mounted on a bobbin about one of the legs of the core.

Berkcan et al. discloses a core [70] for a current sensor [figure 1] having windings [78] mounted on bobbins [72] mounted on the core legs.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use bobbins to mount windings for the core of Takeya et al., as

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modified, for the purpose of providing support for the windings on the leg and provide current sensing.

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al., as modified, as applied to claim 9 above, and further in view of Smith [US 5,495,169].

Takeya et al., as modified, disclose the instant claimed invention except for the specific materials used for the core.

Smith discloses a core [16, 31] for a current sensor being formed of NiFe.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use NiFe for the core of Takeya et al., as suggested by Smith, for the purpose of providing good magnetic flux density.

Smith discloses that various nickel percentages can be used within the core structure to control the magnetic flux density and permeability [column 6, lines 17-38].

The specific percentage of nickel used in each of the core sections would have been an obvious design consideration based on the desired operating characteristics.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donovan Lincoln whose telephone number is 703 308-3111. The examiner can normally be reached on M-F 8:30-5:00.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1920.

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August 5, 2003


LINCOLN DONOVAN
PRIMARY EXAMINER
GROUP 2103